

THE HORSE FLIES AND DEER FLIES OF SOUTH DAKOTA NEW STATE RECORDS AND AN ANNOTATED CHECKLIST (DIPTERA: TABANIDAE)^{1, 2}

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ABSTRACT: Collecting data are reported for 33 species of Tabanidae from South Dakota. New state records and ecological data are presented for 6 tabanid species: *Haematopota americana* Osten Sacken, *Hybomitra epistates* (Osten Sacken), *H. opaca* (Coquillett), *Tabanus lineola* Fabricius, *T. marginalis* Fabricius, and *Tabanus punctifer* Osten Sacken.

The horse and deer flies have always been considered one of the more economically important groups in the order Diptera. They not only possess the potential for transmitting pathogenic organisms to livestock and man (i.e. anaplasmosis, equine infectious anemia, tularemia) but their control is difficult to achieve by any means. Insecticides, although widely used, are only partially effective.

Egg masses of *Tabanus similis* Macquart and *Chrysops aestuans* Van der Wulp are laid on aquatic emergent vegetation that surrounds farm ponds and impoundments in many of the north central states. When beef cattle have access to these sites, vegetation is often consumed or trampled, reducing the available oviposition sites for these flies. The lower numbers of horse and deer flies that inhabited farm ponds in western South Dakota in 1980 indicate that vegetative management on farms and ranches can appreciably lower populations of both *T. similis* and *C. aestuans* (Easton 1982).

The present list includes 33 species, of which six are reported in the state for the first time. Records are based on specimens in the South Dakota State University insect collection, in addition to those collected by the author. Determination of Tabanidae in the SDSU collection has been made previously by L.L. Pechuman of Cornell University and C.B. Philip (California Academy). The initials following each collection refer to the original collector. Records of species lacking an initial were collected by the author.

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Subfamily Chrysopsinae

Genus *Silvius* Meigen

Silvius quadrivittatus (Say). 14 June 1936, Springfield, Bon Homme County, HCS; 10 July 1924, Hot Springs, Fall River County, H; 22 July 1982, 10 miles east, 5 miles south of Buffalo, Harding County; 23 June 1923, Philip, Jackson County, HCS; 1 July 1946, Elk Point, Union County, HCS; 23 June 1946, Yankton, Yankton County. Miller (1978) first reported this species in South Dakota but county records were not given.

Silvius pollinosus Williston. 1 July 1978, Badlands National Park, Jackson County; 18 July 1980, 2 miles east of Cottonwood, Jackson County; 9 July 1979, Haakon County; 15 July 1977, 10 miles east, 3 miles south of Buffalo, Antelope Range and Livestock Research Station, Harding County; 12 July 1979, Wasta, along the Cheyenne River, Pennington County. Reported earlier in South Dakota by Philip (1965) and more recently by Easton (1982) from the Cottonwood Range and Livestock Experiment Station in Jackson County.

Genus *Chrysops* Meigen

Chrysops aestuans Wulp. 24 June 1939, 10 miles south of Wolsey, Beadle County, HCS; 28 June 1939, 5 miles east of Wessington, Beadle County, NPL; 5 August, 1967, LaCreek Lake Wildlife Refuge, Bennett County, EUB; 25 June 1924, Springfield, Bon Homme County, H; 24 June 1923, Newell, Butte County, HCS; 31 July 1940, Belle Fourche, Butte County, NPL; 19 June 1921, Volga, 24 Aug. 1923, Bruce, Brookings County, HCS; 19 June 1933, Hecla, Brown County, HCS; 12 July 1966, Aberdeen, Brown County; 5 July 1946, Henry, Codington County, HCS; 5 July 1946, Watertown, Codington County, HCS; 20 July 1967, McIntosh, Corson County, EUB; 5 August 1967, Stockade Lake, Custer State Park, Custer County, EUB; 15 August 1924, Waubay, Day County, H; 16 July 1967, Dry Lake, Hamlin County, EUB; 15 June 1977, 15 miles southeast of Buffalo, Harding County; 15 July 1945, Canning, Hughes County, HCS; 11 July 1974, Farm Island, Hughes County, PEC and EUB; 17 July 1947, Pierre, Hughes County, HCS; 5 July 1945, Highmore, Hyde County, HCS; 8 July 1947, Kennebec, Lyman County, GPS; 17 July 1947, Presho, Lyman County, HCS; 12 July 1974, Fate Dam, Lyman County, PEC and EUB; 24 June 1950, Cottonwood, Jackson County, HCS; July 1977, 2 miles east of Cottonwood, Jackson County, JR; 11 August 1969, 2 miles west, Arlington, Kingsburg County, JR; 12 July 1974, 1 1/2 miles north of Vivian, Lyman County, PEC and EUB; 26 June 1940, Faith, Meade County, GPS; 30 June 1977, West River Beef Research Unit, Ft. Meade, Meade County; 18 June 1929, Hartford, Vermillion River, Minnehaha County, HCS; 7 July 1966, 2 miles southeast of Rutland, Moody County, EUB; 15 August 1979; 1 mile north Hill City, Lake Mitchell, Pennington County; 30 June 1981, 15 miles east of Pine Ridge, Shannon County, BB; 2 August 1967, Hayes, Stanley County, EUB; 18 June 1924, Elk Point, Union County, H; 19 June 1924, Elk Point, Union County. *C. aestuans* is the most commonly distributed deer fly in the state and probably the most important fly species affecting man in recreational areas. It is found in most of the lakes, rivers, and farm ponds in this state from east to west. Cobb and Balsbaugh (1976) reported *C. aestuans* from Clark, Kingsbury and Spink counties.

Chrysops callidus Osten Sacken. 4 June 1953, Yankton, Yankton County, HCS. First reported by Miller (1978).

Chrysops carbonarius Walker. 21 June 1941, 10 miles southwest of Belle Fourche, Butte County, N.P. Larson; 19 June 1936, Newell, Butte County, HCS; 19 July 1924, Sylvan Lake, Custer County, H; 4 June 1981, Bear Butte State Park, Ft. Meade, Meade County; 27 May, and 31 May 1977, 2 miles east of Cottonwood, Jackson County; 10 June 1940, Porcupine, Shannon County, LKB; 3 June 1981, Wanblee, Washabaugh County.

- Chrysops discalis* Williston. Jellison (1950) reported this species from Tulare, Spink County, HCS.
- Chrysops fulvaster* Osten Sacken. 6 July 1924, Martin, Bennett County, H; 25 June 1935, Springfield, Bon Homme County, HCS; 28 June 1923, Newell, Butte County, HCS; 29 June 1939, Fruitdale, Butte County, NRL; 16 July 1924, Custer, Custer County; 13 July 1924, Hot Springs, Fall River County, H; 21 Aug. 1978, Antelope Range and Livestock Research Station, 10 miles east, 3 miles south of Buffalo, Harding County; 21 July 1950, Cottonwood, Jackson County, HCS; 28 June 1941, 10 miles southwest of Spearfish, Lawrence County, NPL; 26 July 1947, Tinton, Lawrence County, HCS; 24 June 1935, Newton Hills, Canton, Lincoln County, NCS; 22 June 1940, 2 miles northwest of Rapid City, Pennington County, HCS; 13 July 1928, Tulare, Spink County, HCS. Cobb and Balsbaugh, Jr. (1976) were first to record this species from Spink County.
- Chrysops furcatus* Walker. 19 July, 1924, Custer, Custer County, H. Reported by Miller (1978) but without date of collection or locality.
- Chrysops indus* Osten Sacken. 3 June, 1969, Gary, Deuel County, EUB. Reported by Miller (1978).
- Chrysops mitis* Osten Sacken. 16 July 1924, Custer, Custer County, H; 21 July 1950, 2 miles east of Cottonwood, Jackson County; 18 June 1968, Cheyenne Crossing, Lawrence County, EUB; 13 June 1978, Antelope Range and Livestock Research Station 10 miles east, 3 miles south of Buffalo, Harding County; 23 June 1950, Pierre, Hughes County, HCS. First reported by Miller (1978).
- Chrysops pikei* Whitney. 30 July 1935, Edgemont, Fall River County, HCS. Reported by Miller. (1978).
- Chrysops sequax* Williston. 25 July 1981, 7 miles south of Brookings, Brookings County; 31 July 1966, Hide-A-Woods, Deuel County, EUB; 2 miles east of Cottonwood, Jackson County; 2 August 1967, Bear Butte, Meade County, EUB. Reported originally by Miller (1978).
- Chrysops univittatus* Macquart. One female specimen collected from Yankton, Yankton County, is represented in the Nebraska State Museum.

Subfamily Tabaninae

Genus *Haematopota* Meigen

- Haematopota americana* Osten Sacken. NEW STATE RECORD. 1 female, 15 July 1977, Antelope Range and Livestock Research Station, 10 miles east, 3 miles south of Buffalo, Harding County.

Genus *Atylotus* Osten Sacken

- Atylotus bicolor* (Wiedemann). 24 June 1938, Springfield, Bon Homme County, WH. Reported originally by Miller (1978).

Genus *Hybomitra* Enderlein

- Hybomitra criddlei* (Brooks). 25 July, 1924, Spearfish, Lawrence County, H; 4 August, 1967, 5 miles northwest Rockford, Road 231, Lawrence County, EUB. Listed in Miller (1978).
- Hybomitra epistates* (Osten Sacken). NEW STATE RECORD. 1 female collected from Spearfish, Lawrence County, is in the Nebraska State Museum (Lincoln).
- Hybomitra frontalis* (Walker). 24 Aug. 1924, Brookings, Brookings County, GPS; 12 July

1923, Lake Hendricks, Brookings County, HCS; 15 July 1946, Henry, Codington County, HCS; 19 July 1924, Custer, Custer County, H; 15 August 1924, Waubay, Day County, H; 16 July 1967, Dry Lake, Hamlin County, EUB; 30 June 1977, West River Beef Research Unit, Ft. Meade, Meade County; 12 July 1932, Onida, Sully County, GPS. McAlpine (1961) reported this species from numerous fresh water sloughs characterized by aspens or willows at 3 localities in the northeastern and one locality in the southwestern area of the state near the Nebraska state line.

Hybomitra illota (Osten Sacken). 6 July 1982, 7 miles south of Brookings, Brookings County; 10 July 1976, Willow Lake, Clark County, PEC; 25 June 1967, Sieche Hollow, Roberts County, EUB. Cobb and Balsbaugh, Jr. (1976) reported this species from Clark and Kingsbury counties of eastern South Dakota.

Hybomitra lasiophthalma (Macquart). 22 July 1924, Custer, Custer County, H. Reported by Miller (1978).

Hybomitra opaca (Coquillett). NEW STATE RECORD. 1 female, 30 June 1978, Antelope Range and Livestock Research Station, 10 mi. east, 3 miles south of Buffalo, Harding County.

Hybomitra pediontis (McAlpine). 16 July 1978, Antelope Range and Livestock Research Station, 10 miles east, 3 miles south of Buffalo, Harding County. Adults and immatures are associated with alkaline sloughs. *H. pediontis* was first reported in this state by McAlpine (1961) in August and July from Henry, Codington County and Gettysburg, Potter County.

Hybomitra rhombica rhombica (Osten Sacken). 17 July 1932, Custer, Custer County, FRB; 4 August 1967, Crooks Tower Lake, Lawrence County, EUB. Reported by Miller (1978).

Hybomitra rupestris (McDunnough). Custer, Custer County H. Reported by Miller (1978).

Hybomitra tetrica hirtula (Bigot). 22 June 1924, Custer, Custer County, H; 28 June 1977; West River Beef Research Unit, Ft. Meade, Meade County. Recorded originally from South Dakota by Philip (1965).

Genus *Tabanus* Linnaeus

Tabanus atratus Fabricius. 29 June 1923, Newell Butte County; 28 July 1940, Belle Fourche, Butte County, NPL; 24 July 1937, Gary, Deuel County, NCS; 25 August 1925, Faulkton, Faulk County, NCS; 11 July 1938, Estelline, Hamlin County, HCS; 17 July 1947, Pierre, Hughes County, HCS; August 1941, Wessington Springs, Jerauld County, HCS; 18 July 1933, Lead, Lawrence County; 17 August 1931, Canton, Lincoln County, HCS; 9 August 1921, Wood, Mellette County; July 1980, Soix Falls, Minnehaha County, SM; 17 July 1939, Flandreau, Moody County, HCS; 7 Sept. 1979, 9 miles south of Brookings, Moody County; 1 July 1948, Sisseton, Roberts County, HCS; 12 August 1922, Witten, Tripp County; 17 July 1921, Parker, Turner County; 11 August 1980, Centerville, Turner County, JG. Reported by Miller (1978).

T. atratus, as a pest of livestock, is the largest fly in the state however, numbers of this species are not particularly high in any area. Manitoba or black-ball traps do not particularly attract this species.

Tabanus lineola Fabricius. NEW STATE RECORD. 1 specimen from Yankton, Yankton County, collected by J. Edman, is in the Nebraska State Museum.

Tabanus marginalis Fabricius. NEW STATE RECORD. 1 female, 6 August 1977, Cottonwood Range and Livestock Research Station, Jackson County.

Tabanus orbicallus Philip. First reported in S. Dakota by Philip (1936) at Yankton in Yankton County, however, Easton (1982) reported it more recently in the western part of the state at Cottonwood in Jackson County.

Tabanus punctifer Osten Sacken. NEW STATE RECORD. 4 females, 15 July 1977, 10 miles east, 3 miles south of Buffalo, Harding County; 4 July 1982, Spearfish, Lawrence

County; 1 July 1980, Presho, Lyman County; 30 June 1977, West River Beef Research Unit, Ft. Meade, Meade County.

Tabanus quinquevittatus Wiedemann. 27 June 1924, Springfield, Bon Homme County. Listed originally from S. Dakota by Philip (1965).

Tabanus reinwardtii Wiedemann. 2 August 1924, Springfield, Bon Homme County, H; Antelope Range and Livestock Research Station, 10 miles east, 3 miles south of Buffalo, Harding County; 23 July 1969, Wood, Mellette County, HCS.

Tabanus similis Macquart. 5 August 1967, LaCreek Lake Wildlife Ref., Bennett County, EUB; 25 June 1924, Springfield, Bon Homme County, H; 30 June 1923, Brookings, Brookings County, HCS; 16 June 1944, Hecla, Brown County, HCS; 25 August 1944, Chamberlain, Brule County, HCS; 29 June 1923, Newell, Butte County, HCS; 30 June 1924, Lake Andes, Charles Mix County, H; 19 June 1974, Willow Lake, Clark County, PEC; 18 June, Mitchell, Davison County, HCS; 14 July 1951; Bristol, Day County, JAL; 15 July 1945, Canning, Hughes County, HCS; 26 July 1948, Highmore, Hyde County, HCS; July 1977-83; 2 miles east of Cottonwood, Jackson County; 28 June 1941, 10 miles southwest of Spearfish, Lawrence County, NPL; 12 July 1974, Fate Dam, Lyman County, PEC and EUB; 2 August 1967, Bear Butte, Meade County, EUB; 28 June 1977, West River Research Station, Meade County; 19 June 1924, Elk Point, Union County, H. Cobb and Balsbaugh (1976) reported this species from Day, Kingsbury and Spink Counties of eastern South Dakota.

Tabanus stonei Philip. 11 July 1941, Belle Fourche, Butte County, NPL. Reported by Miller (1978).

Abbreviations for collectors: BB, Bruce Baran; EUB, Edward U. Balsbaugh, Jr.; FRB, Fred R. Bingham; LKB, Lynn K. Brunn; PEC, Philippe E. Cobb; JG, Joey Gednalske; H, H.C. Hallock; WH, William Horsfall; NPL, N.P. Larson; JAL, John A. Lofgren; SM, Stephen Munk; JR, Jerry Riedel; WMR, William M. Rogoff; HCS, Harry C. Severin; and GBS, G.B. Spawn.

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